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EXAMINER	
ROBERTS, JESSICA M	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/500,453	CHIANG ET AL.	
	Examiner	Art Unit	
	JESSICA ROBERTS	2621	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 August 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,5-14,17-19 and 21-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *07/15/2005*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of species II in the reply filed on 08/04/2008 is acknowledged. The traversal is on the ground(s) that the examiner has not identified mutually exclusive species. In particular, Applicants submit that Figure 3 was improperly listed as only corresponding to the Specie of Figure 2 and Figure 6 was improperly listed as only corresponding to the Specie of Figure 11. This is not found persuasive because a predictor module 706 is the same as the predictor 406 of Fig. 2 except that it receives and uses feedback data from the feedback module 408, [0095]. Further, the mean square error for each s_act (or sym) value is used to adjust the predictive model (i.e., the look-up table or the equation parameters stored in memory associated with the predictor 406) in the predictor module 706. Therefore, it is clear to the examiner that Fig. 6 and 11 are distinct from species II, figures 2 and 3.

The requirement is still deemed proper and is therefore made FINAL.

Drawings

2. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the

applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Status of the Claims

Claims 1-24 are currently pending. Claims 1, 5-14, 17-19, and 21-24 have been elected. Claims 2-4, 15-16, and 20 will be treated as non-elected claims.

Claim Rejections - 35 USC § 112

3. Claims 1, 5-14 and 23-24 provides for the use of a method for use in encoding input video data but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claims 1, 5-14, and 23-24 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd.* v. *Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1, 5-14, and 23-24 are rejected under 35 U.S.C 101 as not falling within one of the four statutory categories of invention. While the claims recite a series of steps

or acts to be performed, a statutory “process” under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state of thing (Reference the May 15, 2008 memorandum issued by Deputy Commissioner for Patent Examining Policy, John J. Love, titled " Clarification of 'Processes' under 35 U.S.C. 101"). The instant claims neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not quality as a statutory process.

Claims 18, 19, and 22, which are drawn to functional descriptive material including a predictor module. Normally, the claim would be statutory. However, the specification, at paragraph [0051] defines the module as encompassing a statutory module such as "hardware" as well as *non statutory* subject matter such as “*software modules executed by the processor*”.

Because the full scope of the claim is properly read in light of the disclosure and it encompasses non-statutory subject matter, the claim as a whole is non-statutory.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al, Target Bit Matching for MPEG-2 Video Rate Control.

As per **claim 1**, Lee teaches A method for use in encoding video data, including using a metric function to generate metric values from said video data (Lee teaches the spatial activity measure for macrobock *j* is first calculated from the four luminance

frame-based subblocks and the four luminance field based subblocks using the original pixel value. 2.3 Adaptive Quantization and equation (8)), and respective encoding parameters (quantization parameter *q* 3.2. Reference Quantization Parameter) and selecting at least one of said encoding parameters on the basis of a desired quantity of encoded video data (While encoding the reference macroblock, we adjust the initial quantization parameter Q_{int} such that the number of actual coding bits is close to the average number of coding bits B_{avg} for the macroblock, 3.2 reference Quantization Parameter. Since the quantization parameter is adjusted such that the average number of bits is close to the average, and the average number of coding bits is directly related to the target number of bits, T (equations 24), it is clear to the examiner that Lee discloses to adjust the quantization parameter based with respect to a desired quantity (target bits) of encoded data) and a predetermined relationship between metric values and respective quantities of encoded video data (Lee discloses the normalized local activity is N_act_j is defined as:

$$N\_act_j = \frac{2 \times act_j + avg\_act}{act_j + 2 \times avg\_act} \qquad (11)$$

Further disclosed is for estimating the reference quantization parameter for each macroblock, we define the following equation based on the rate distortion theory:

$$q_i = 2^C \times \gamma_i \qquad (13)$$

Where C is a parameter that controls the bit rate, and γ_i scaling factor which characterizes the properties of the current macroblock. Further disclosed is where we may use N_act_j in Eq. (11) as the scaling factor γ_i, for macroblock *i*. Further, while

encoding the reference macroblock we adjust the initial quantization parameter such that the number of actual coding bits is close to the average number of coding bits B_{avg} for the macroblock. The value of C is then calculated from Eq. 13. 3.2 Reference Quantization Parameter and Eq. 13-18). Since Lee discloses the local activity is the scaling factor for the macroblock, and to adjust the quantization parameter such that the number of actual coding bits are close to the average number of coding bits (where the number of coding bits is directly related to the target number of bits), which is used to calculate the parameter that controls the bit rate, it is clear to the examiner that there is a predetermined relationship (where the average bit rate is close to the target bit rate) among the quantization parameter and the parameter that controls the bit rate, which reads upon the claimed limitation).

As per **claim 5**, which is substantially the same as claim 1, in addition to determining a relationship between metric values generated from reference video data using a metric function and using said metric function to generate metric values from said input video data and respective second encoding parameters. Thus the rejection for claims applies for common subject matter.

Lee teaches determining a relationship between metric values generated from reference video data using a metric function (we then select a reference macroblock that has the average scaling factor γ_{avg}. Since the reference block should characterize the coded pictures, we chose a MB_intra, MB_FORWARD, and MB_BACKWARDcoded macroblock for I, P, and B pictures, respectively. While encoding the reference

macroblock, we adjust the initial quantization parameter Q_{init} such that the number of actual coding bits is close to the average number of coding bits B_{ang} for the macroblock. Since Lee discloses to select the reference macroblock that has the closest scaling factor, where the scaling factor is the normalized local activity, and to adjust the initial quantization parameter, it is clear to the examiner that Lee discloses to determine local activity of a reference block which reads upon the claimed limitation, 2.3 Adaptive Quantization) and using said metric function to generate metric values from said input video and respective second encoding parameter (Lee discloses where the reference quantization parameter of macroblock *i* is calculated as:

$$Q_i = Q_{ref} + \Delta \qquad (21)$$

where Q_{ref} is the reference quantization parameter of the current macroblock, and Δ is the amount of quantization step size to be adjusted. Since the initial quantization is determined with respect to the reference quantization, and is used to determine the parameter that controls the bit rate, therefore, it is clear to the examiner that Lee discloses to use the bit rate control parameter with respect to the reference quantization parameter, which reads upon the claimed limitation); and selecting at least one of said second encoding parameters on the basis of a desired quantity of encoding video and said relationship (Lee discloses the normalized local activity is N_act_j is defined as:

$$N\_act_j = \frac{2 \times act_j + avg\_act}{act_j + 2 \times avg\_act} \qquad (11)$$

Further disclosed is for estimating the reference quantization parameter for each macroblock, we define the following equation based on the rate distortion theory:

$$q_i = 2^C \times \gamma_i \qquad (13)$$

Where C is a parameter that controls the bit rate, and γ_i scaling factor which characterizes the proprieties of the current macroblock. Further disclosed is where we may use N_act_j in Eq. (11) as the scaling factor γ_i, for macroblock *i*. Further, while encoding the reference macroblock we adjust the initial quantization parameter such that the number of actual coding bits is close to the average number of coding bits B_{avg} for the macroblock. The value of C is then calculated from Eq. 13. 3.2 Reference Quantization Parameter and Eq. 13-18). Since Lee discloses the local activity is the scaling factor for the macroblock, and to adjust the quantization parameter such that the number of actual coding bits are close to the average number of coding bits (where the number of coding bits is directly related to the target number of bits), which is used to calculate the parameter that controls the bit rate, it is clear to the examiner that there is a predetermined relationship (where the average bit rate is close to the target bit rate) among the quantization parameter and the parameter that controls the bit rate, which reads upon the claimed limitation).

As per **claim 6**, Lee teaches a method as claimed in claim 5, wherein said relationship is a power law relationship (3.2 Reference Quantization Parameter, Eq. (13)).

As per **claim 7**, Lee teaches a method as claimed in claim 5, wherein said metric function is based on AC coefficients of discrete cosine transformation data generated from said video data (Lee discloses where we may use N_act_j in Eq. (11) as the scaling factor γ_i as the scaling factor, for γ_i macroblock *i*. However, since a good measure of the human visual sensitivity is the power of AC coefficients normalized by the DC value, we can define the scaling factor:

$$\gamma_i = \sqrt{\frac{\sum_{j=0}^{3}\sum_{k=1}^{63} dct_{i,j,k}^2}{232}}\,\frac{128}{\max(DC, DC_{min})} \qquad (14)$$

Therefore, it is clear to the examiner that Lee discloses a metric function that is based on the AC coefficients of the macroblock normalized by the DC coefficients, which reads upon the claimed limitation.

As per **claim 13**, Lee teaches a method as claimed in claim 5, including determining basic metric values from said metric function and basic encoding parameters, and deriving metric values from said basic metric values (Lee discloses for estimating the reference quantization parameter for each macroblock, we define the following equation based on the rate distortion theory: $q_i = 2^c \times \gamma_i$ (13). As understood by the examiner, the basic metric function is a quantization vector (see applicants disclosure [0054 - 0056] and table 2-3, and Lee discloses the reference quantization parameter is a vector, it is clear to the examiner that the reference quantization parameter reads upon the claimed limitation.

As per **claim 17,** see the rejection and analysis made in claim 5, except this is a claim to a video encoding module with the same limitations as claim 5. Thus the rejection and analysis made for claim 5 also applies.

As per **claim 18**, which is substantially the same as claim 5, thus the rejection and analysis made in claim also applies.

As per **claim 21**, see the rejection and analysis made in claim 17, except this is a claim to a digital video (DV) encoder with the same limitations as claim 17. Thus the rejection and analysis made in claim 17 also applies.

As per **claim 23**, Lee teaches A method as claimed in claim 1, including generating predicted quantities of encoded video data from said predetermined relationship and said metric values generated from said video data (where we can exploit the relationship between the number of actual coding bits, BIT_{actual} and the number of estimated coding bits, $BIT_{estimated}$, of the previous macroblock. BIT_{actual} and $BIT_{estimated}$, represent the number of actual bits and the number of allocated bits for the previous macroblock respectively, see 3.3 Target Bit Matching for Adaptive Quantization), and selecting one or more of said predicted quantities of encoded video data closest to said desired quantity of encoded video data (Lee discloses to adjust the initial quantization parameter Q_{int} such that the number of actual coding bits is close to the average number bits B_{avg} for the macroblock, see 3.2 Reference Quantization Parameter and eq. 17-18)

As per **claim 24**, Lee teaches A method as claimed in claim 1, wherein said predetermined relationship is determined on the basis of metric values generated by said metric-function from reference video data and respective encoding parameters (Lee discloses where to select a reference macroblock that has the average scaling factor. Since the reference macroblock should characterize the coded picture, we choose a MB_INTA, MB_FORWARD, and MB_FORWARD I, MB_BACKWARD coded macroblock for the I, P, and B pictures, respectively. While encoding the reference block, we adjust the initial quantization parameter Q_{int}, such that the number of actual coding bit is close to the average number of coding bits B_{avg} for the macroblock. The value of C is then calculated form eq. 13, see 3.2 Reference Quantization Parameter and eq. 13, 17-18. Therefore, it is clear to the examiner that the parameter C that controls the bit rate, is calculated with respect to the reference frames, which reads upon the claimed limitation), and respective quantities of encoded video data generated by encoding said reference video data using said respective encoding parameters (fig. 1, element encoder).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 8, 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al, Target Bit Matching for MPEG-2 Video Rate Control and in view of Wu et al., US-6,974,378.

As per **claim 8**, Lee does not explicitly teach a method as claimed in claim 5, wherein said metric function is a spatial activity metric function based on a sum of weighted AC discrete cosine transformation coefficients.

However, Wu teaches wherein said metric function is a spatial activity metric function based on a sum of weighted AC discrete cosine transformation coefficients (The spatial complexity can be estimated using a weighted sum of the magnitudes of the AC coefficients for each macroblock of the I-Frame, column 8 line 12-14). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Wu with Lee for providing improved picture quality.

As per **claim 11**, Lee (modified by Wu) as a whole teaches everything as claimed above, see claim 8. In addition, Lee teaches a method as claimed in claim 8, wherein metric values are determined for each 8.times.8 pixel block of said video data using said

metric function (Lee discloses the spatial activity measure for macroblock *j* is first calculated from four luminance frame-based subblocks and the four luminance field-based subblocks using the original pixel values, where P_k, are the pixel values in the original 8 X8 block, 2.3 Adaptive Quantization, and equations 8, 9, 10. Since Lee discloses to calculate the spatial activity for the macroblock, where P_k is the pixel value in the original 8x8 block, it is clear to the examiner that macroblock as disclosed by Lee is 8X8, which reads upon the claimed limitation).

As per **claim 12**, Lee (modified by Wu) as a whole teaches everything as claimed above, see claim 11. In addition, Lee teaches a method as claimed in claim 11, including determining a metric value for a macroblock by summing metric values for the constituent 8.times.8 pixel blocks (Lee discloses Lee discloses the spatial activity measure for macroblock *j* is first calculated from four luminance frame-based subblocks and the four luminance field-based subblocks using the original pixel values, where P_k, are the pixel values in the original 8 X8 block, 2.3 Adaptive Quantization, and equations 8, 9, 10, 2.3 Adaptive Quantization and Eq (8-12). Further, we may use N_act_j in Eq. (11) as the scaling factor γ_i as the scaling factor, for γ_i macroblock *i*. However, since a good measure of the human visual sensitivity is the power of AC coefficients normalized by the DC value, we can define the scaling factor:

$$\gamma_i = \sqrt{\frac{\sum_{j=0}^{3}\sum_{k=1}^{63} dct_{i,j,k}^2}{232}} \frac{128}{\max(DC, DC_{\max})} \qquad (14)$$

Further, in Eq. 14, Lee discloses to sum the dct coefficients. Since Lee discloses the to use the local activity as the scaling factor, that is derived from an 8x8 macroblock,

and to sum the DCT coefficients, it is clear to the examiner that Lee discloses to sum the DCT coefficients which includes both AC and DC coefficients for the 8X8 macroblock.

9. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al, Target Bit Matching for MPEG-2 Video Rate Control and in view of Boice et al., US-5,644,504.

As per **claim 14**, Lee is silent in regards to a method as claimed in claim 13, including deriving said metric values from said basic metric values using shift and add operations.

However, Boice teaches using shift and add operations (Quantization is a process to determine the stepsize per macroblock. Stepsize is based on the light intensity variances of the macroblock. The average of intensity of the macroblock is first calculated. Variances of each block are then determined. The smallest variance is used to select the stepsize for the macroblock. In the processor described herein, the average intensity can be calculated by ADDACC and shift instructions, column 7 line 41-47). Therefore, it is clear to the examiner that Boice discloses to use shift and add operations, which reads upon the claimed limitation.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Boice with Lee for more efficient image coding.

10. Claim 19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al, Target Bit Matching for MPEG-2 Video Rate Control and in view of Oikawa et al., US-5,677,734.

As per **claim 19**, Lee teaches A video encoding module, including a predictor module for determining estimates for bit counts representing the quantity of video data encoded using respective quantization vectors (Lee discloses while encoding the reference macroblock, we adjust the initial quantization parameter Q_{int} such that the number of coding bits is close to the average number of coding bits B_{avg} for the macroblock, 3.2 Reference Quantization Parameter and eq. 17 and 18. Lee further discloses where we can exploit the relationship between the number of actual coding bits, BIT_{actual} and the number of estimated coding bits, $BIT_{estimated}$, of the previous macroblock. BIT_{actual} and $BIT_{estimated}$, represent the number of actual bits and the number of allocated bits for the previous macroblock respectively, see 3.3 Target Bit Matching for Adaptive Quantization. Since Lee discloses while encoding the reference block, to adjust the initial quantization parameter such that number of coding bits is close to the number of average coding bit, and the BIT_{actual} and $BIT_{estimated}$, represent the number of actual bits and the number of allocated bits for the previous macroblock, it is clear to the examiner that Lee discloses to estimate the number of bits to represent the macroblock using an initial quantization parameter which reads upon the claimed limitation). Lee does not explicitly teach a selector module for selecting two of said quantization vectors on the basis of said estimates, first quantization and variable length coding modules for generating first encoded video data using a first of said selected quantization vectors

Lee discloses where the , second quantization and variable length coding modules for generating second encoded video data using a second of said selected quantization vectors, and an output decision module for selecting one of said first encoded video data and said second encoded video data for output on the basis of at least one of the bit count value of said first encoded video data and the bit count value of said second encoded video data.

However, Oikawa teaches a selector module for selecting two of said quantization vectors on the basis of said estimates (According to the present invention, there is also provided an apparatus for recording quantized and encoded digital video signals comprising first quantization step decision means for determining a quantization step in terms of a video segment made up of plural macro-blocks as a unit so that the quantity of quantized data is less than a pre-set data quantity, second quantization step decision means for determining a quantization step in terms of the macro-blocks as a unit so that the quantity of quantized data is less than the pre-set data quantity, and quantization means for quantizing the digital video signals with the quantization steps determined by the first quantization step decision means and the second quantization step decision means, column 2 line 45-57. Since Oikawa teaches a quantizing the digital video signals with the quantization steps determined by the first quantization step decision means and the second quantization step decision means, it is clear to the examiner that Oikawa discloses to select the first and second quantization step decision, which reads upon the claimed limitation), first quantization and variable length coding modules for generating first encoded video data using a first of said selected

quantization vectors (first quantization step decision circuit, column 4 line37-44 and fig.1 element 23, 26) , second quantization and variable length coding modules for generating second encoded video data using a second of said selected quantization vectors (second quantization step decision circuit, column 5 line 66 to column 6 line 3, and fig.1 element 24, 26), and an output decision module for selecting one of said first encoded video data and said second encoded video data for output on the basis of at least one of the bit count value of said first encoded video data and the bit count value of said second encoded video data (the first quantization unit determines a quantization step in terms of a video segment made up of plural macro-blocks as a unit so that the quantity of quantized data is less than a pre-set data quantity, while the second quantization unit decision unit determines a quantization step in terms of the macro-blocks as a unit so that the quantity of quantized data is less than the pre-set data quantity. The quantization unit quantizes the digital video signals with the quantization steps determined by the first quantization step decision unit and the second quantization step decision unit. This enables the degree of quantization to be refined in a range of a pre-set data quantity of quantized data to render it possible to make effective utilization of redundant bits, thus assuring efficient encoding and improved picture quality, column 2 line 63 to column 3 line 4 and fig, 6. Therefore, it is clear to the examiner that Oikawa discloses to select the quantization step size based on the quantity of VLC data as shown in fig. 6, which reads upon the claimed limitation).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Oikawa with Lee for providing efficient encoding and improved picture quality, column 3 line 4-8.

As per **claim 22**, which is substantially the same as claim 19, except this is a claim to MPEG encoder. In addition to a coding module for encoding the input video data using the selected quantization vector.

Lee teaches a MPEG encoder (MEPG-2, see abstract and Fig. 1) coding module for encoding the input video data using the selected quantization vector (see fig. 1).

Allowable Subject Matter

11. Claims 9-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter. The present invention as claimed involves a metric function of the form u , v f (u , v) w (u , v) q (u , v) ,where f(u,v) is a discrete cosine transformation coefficient of a block element with coordinates (u,v), w(u,v) is a weight for said coefficient, and q(u,v) is a quantization parameter for said coefficient.

13. The prior art of record fails to anticipate or render obviousness the limitations of the claimed invention where the metric function is of the form u , v f (u , v) w (u , v) q (u , v) ,where f(u,v) is a discrete cosine transformation coefficient of a block element with coordinates (u,v), w(u,v) is a weight for said coefficient, and q(u,v) is a quantization parameter for said coefficient.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

15. Pullen et al., US-5,923,376 Method and system for the fractal compression of data using an integrated circuit for discrete cosine transform compression/decompression.

16. Kobayashi et al., EP0912062 B1 Image encoding apparatus, Image encoding method, and image recording medium

17. Gardos et al., US-5,802,213 Encoding video signals using local quantization levels.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JESSICA ROBERTS whose telephone number is (571)270-1821. The examiner can normally be reached on 7:30-5:00 EST Monday-Friday, Alt Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha D. Banks-Harold can be reached on (571) 272-7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Marsha D. Banks-Harold/
Supervisory Patent Examiner, Art Unit 2621
/Jessica Roberts/
Examiner, Art Unit 2621